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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/613,951      | 07/11/2000  | Robert G. Wendt      | TPG 306             | 1942             |

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EXAMINER

PAIK, SANG YEOP

ART UNIT

PAPER NUMBER

3742

DATE MAILED: 01/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                         |                  |
|------------------------------|-------------------------|------------------|
| <b>Office Action Summary</b> | Application No.         | Applicant(s)     |
|                              | 09/613,951              | WENDT ET AL      |
|                              | Examiner<br>Sang Y Paik | Art Unit<br>3742 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on \_\_\_\_ .

2a) This action is FINAL.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-29 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_ is/are allowed.

6) Claim(s) 1-29 is/are rejected.

7) Claim(s) \_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_ .  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

1) Notice of References Cited (PTO-892)                    4) Interview Summary (PTO-413) Paper No(s). \_\_\_\_ .

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)                    5) Notice of Informal Patent Application (PTO-152)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ .                    6) Other: \_\_\_\_ .

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 20, there is no proper antecedent basis for "the lid".

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 6, 7, 9-11, 13-15 and 17-21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Chow (US 5,031,229).

Chow clearly anticipates all the structure claimed including a vessel (20) made of boron nitride, a lid having a plurality of nozzle (19) and the heating system (24', 25') for heating the nozzle at the temperature higher than the crucible vessel. Also see Figure 2.

5. Claims 26, 27 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Colombo et al (US 5,820,681).

Colombo et al clearly anticipates all the structure claimed including a vessel (31) with a vapor nozzle (32) and a thermal control shield (30). Also see Figure 2.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2-5, 12 ,16 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow (US 5,031,229) in view of Colombo et al (US 5,820,681) or Swindt (US 3,345,059).

Chow discloses all the structure claimed except a thermal control shield disposed around the vessel.

Colombo et al shows a thermal shield (15, 30) which shields the vessel. Swindt also shows a crucible vessel with a thermal shield having an outer shell and a plurality of insulation layers.

In view of Colombo et or Swindt, it would have been obvious to one of ordinary skill in the art to adapt Chow with the thermal shield to prevent the loss of heat and maintain the desired heating temperature.

With respect to claim 4, Colombo et al further shows that the thermal heat shield is made of a tantalum foil. It would have been obvious to further adapt Chow, as modified by Swindt, with the outer shield made of tantalum since such material is known in the art to provide the heat shield.

With respect to claims 12, 16 and 22, Chows does not show the claimed ranges for the spaced apart nozzles and discharge openings. However, it would have been obvious to one of

ordinary skill in the art to modify the distance between the nozzles and discharge opening sizes depending upon the rate and the volume of the material at which the user desired to produce.

8. Claims 8 and 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chow in view of Colombo et al or Swindt as applied to claims 2-5, 12, 16 and 22-24 above, and further in view of Finicle (US 5,158,750).

Chow in view of Colombo et al or Swindt discloses all the structure claimed except the vessel is made of graphite or pyrolytic boron nitride coated graphite

Finicle shows a crucible vessel made of graphite with a top coat of pyrolytic boron nitride. In view of Finicle, it would have been obvious to one of ordinary skill in the art to adapt Chow, as modified by Colombo or Swindt, with the vessel made of graphite material that can provide a uniform heat distribution.

9. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Colombo et al (US 5,820,681) in view of Swindt (US 3,345,059).

Colombo et al discloses all the structure claimed except a thermal insulation layer.

Swindt shows a crucible vessel with a thermal shield having an outer shell and a plurality of insulation layers. In view of Swindt, it would have been obvious to one of ordinary skill in the art to adapt Colombo with a thermal insulation layer to further add the insulation layer to prevent the heat loss.

10. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Colombo et al (US 5,820,681) in view of Chow (US 5,031,229).

Colombo et al discloses all the structure claimed except the heating system.

Chow shows a heating system having the heating system (24', 25') for heating the nozzle at the temperature higher than the crucible vessel. In view of Chow, it would have been obvious to one of ordinary skill in the art to adapt Colombo et al with the heating system to prevent condensation of the heated and vaporized material at the nozzle.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Conner (US 3,328,017), Weinert (US 5,239,611), Krug et al (US 5,216,742) and Tsukazaki et al (US 4,812,326).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y Paik whose telephone number is 703-308-1147. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teresa Walberg can be reached on 703-308-1327. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3463 for regular communications and 703-305-3463 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0861.

Sang Y Paik  
Primary Examiner  
Art Unit 3742

S. Paik

syp  
January 25, 2002

## Attachment for PTO-948 (Rev. 03/01, or earlier)

6/18/01

**The below text replaces the pre-printed text under the heading, "Information on How to Effect Drawing Changes," on the back of the PTO-948 (Rev. 03/01, or earlier) form.**

### **INFORMATION ON HOW TO EFFECT DRAWING CHANGES**

#### **1. Correction of Informalities -- 37 CFR 1.85**

New corrected drawings must be filed with the changes incorporated therein. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTO-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the Notice of Allowability. Extensions of time may **NOT** be obtained under the provisions of 37 CFR 1.136(a) or (b) for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

#### **2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.**

All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings **MUST** be approved by the examiner before the application will be allowed. No changes will be permitted to be made other than correction of informalities, unless the examiner has approved the proposed changes.

#### **Timing of Corrections**

Applicant is required to submit the drawing corrections within the time period set in the attached Office communication. See 37 CFR 1.85(a)

Failure to take corrective action within the set period will result in **ABANDONMENT** of the application.